

## **Historic, Archive Document**

Do not assume content reflects current scientific knowledge, policies, or practices.





*Mrs. Graf*

UNITED STATES DEPARTMENT OF AGRICULTURE  
Bureau of Agricultural Engineering

MONTHLY NEWS LETTER

Vol. 3.

June 25, 1934

No. 12

The annual meeting of the A.S.A.E. was held in Detroit, Mich. June 18 to 21. Papers presented by members of this bureau who attended were: Engineering Phases of Land Use Planning, by S.H. McCrory; Latest Results of Engineering Experiments at Soil Erosion Control Stations, by C. E. Ramser; Engineering Phases of Pest Control, by R.M. Merrill; The Nation-wide Farm Home Survey, by Wallace Ashby; Problems of Reconditioning the Farm House, by A.D. Edgar; Irrigation Needs of Humid Sections, by F. E. Staebner. R. B. Gray, L.A. Jones, R. D. Marsden, G. W. Kable, E. M. Dieffenbach, E. D. Gordon, Frank Irons, S. P. Lyle, O. M. Page, O. K. Hedden, and A. H. Graves also attended. Mr. Gray is chairman of the Power and Machinery Division of the Society.

The Bureau of Agricultural Engineering is acting as Engineer-Advisor to F.E.R.A. in projects relating to use of land and water. L.A. Jones is in charge of this project for the Bureau. Geo. M. Warren has been temporarily assigned to assist in this work; and it is expected that others will be called upon from time to time. Mr. Jones has been relieved of all other duties; C. E. Ramser will direct the erosion-control work from headquarters in Washington; the drainage and C.C.C. work will be handled directly by the Chief of Bureau for the time being.

James Earl Miller, senior architect, will have charge of all Public Works projects in the Division of Plans and Service, and M. C. Betts, Chief of the Division, will act as consulting architect on those projects.

D. L. Yarnell accompanied Professors Woodward and Barrow, members of the Mississippi River Valley Committee, on an inspection trip along the Mississippi from Cairo to New Orleans. Mr. Yarnell then resumed work on the Missouri River on a survey of flood damage to crops.

A number of drainage pumping districts on upper Mississippi and Illinois Rivers have been inspected by J. G. Sutton. As a rule, corn and wheat in the districts had not suffered from drought as severely as crops on adjacent hill lands and the financial prospects of the farmers in the districts appeared to be the best since 1930. Mr. Sutton inspected the soil erosion stations at Zanesville, Bethany, and Clarinda while on this trip.

Considerable difficulty in maintaining tile lines in fine sand in Florida is reported by B.O. Childs. Guano sacks wrapped around the joints have rotted and permitted sand to enter the tile. Tile were thrown out of line, increasing the opening. Some tiles have settled as much as 0.5 foot, and adjacent tiles were found 1 inch out of alignment due to the sand being pumped out through the tiles.

D. G. Miller inspected the timber drainage plots, and found water levels higher than a year ago due to more plentiful rain this spring in the north woods. Photographs showed that considerable growth of timber had occurred since last year and that numerous new trees had sprouted.

C.E. Ramser is making a trip through the North Central States to inspect the engineering work on the projects of the Soil Erosion Service of the Department of the Interior and to confer with the Regional Directors of that Service in Ohio, Illinois, Wisconsin, Iowa, Missouri, Nebraska and



Kansas. Mr. Ramser will address the meeting of the A.S.A.E. at Detroit, and on July 9 the annual meeting of the Southwest Soil and Water Conservation Conference at Manhattan, Kans. on "Recent Engineering Results on the Ten Federal Soil Erosion Stations."

Further proof of the value of terraces as conservers of top-soil comes from the Guthrie station where, H. S. Riesbol reports, during the three-year period 1931 to 1933, soil loss from a non-terraced plot of 3.23 acres with an average land slope of 5.13 feet per 100 has amounted to 8.2 times that from a terrace 2,500 feet long with a vertical interval of 4 feet and grade variable from level to 4 inches per 100 feet. This terrace is located on the same type soil as the non-terraced plot. The non-terraced plot has lost 19.7 times as much soil as a terrace 1,500 feet long with a vertical interval of 3.5 feet and constant grade of 2 inches per 100 feet. The soil of the plot had experienced more serious erosion losses at the time experimental work was started than was the case on the terrace drainage area.

For the year 1933 the soil loss from the non-terraced plot was 45 times that from a level terrace 650 feet long with a 4-foot interval located on the same soil and slope and cropped in an identical manner.

The operation of 2-row tractor machinery on terraced land has been improved greatly by a few simple changes. R. W. Baird of the Tyler erosion station, Texas, believes that by careful design machinery can be built to operate satisfactorily without appreciably increasing the cost. The corn and cotton planter as used at Tyler this year consisted of 2-row tractor planter from which the planting attachment was removed; substituting two 1-row horse-drawn planters, attached with a flexible link to the fertilizer opener shoe of the original planter. The rear wheels of the planters and depth-gage shoes keep the furrow openers at a fairly uniform depth on uneven land. The only use made of the main frame of the old machine was to carry the fertilizer distributing machinery and keep the two planters upright and in position. In designing a machine of this type, much of the heavy framework of the original machine could be eliminated.

P. C. McGrew reports that at the Pullman station erosion and runoff were measured for terraces with grades of level, 6, 12, 18 and 24 inches per 100 feet. The terrace of 24-inch grade was 685 feet long and the other four terraces were all 780 feet long. The terrace of 24-inch grade has a vertical interval of 17.0 feet while the others are all very close to 14.0 feet. Land slope varies from 15.2 to 26.7 feet per hundred. The soil loss was 1.28 tons per acre for the level terrace, 2.90 tons for the 6-inch grade, 7.20 tons for the 12-inch grade, 10.36 tons for the 18-inch grade, and 13.67 tons for the 24-inch grade. The 6 and 12-inch grades gave best results from the standpoints of operation and soil loss.

A survey of the extent and seriousness of the water shortage in San Joaquin Valley, Calif., ordered by Secretary Wallace, was made during the first two weeks of the month by Paul A. Ewing, Fred C. Scobey, Harry F. Blaney, O.V.P. Stout, and Arthur A. Young. At the conclusion of the field work the party assembled at Berkeley to prepare a report on the survey, in which an effort was made to identify closely the areas considered to have a deficient water supply. The developments over a series of years leading up to the present critical situation were reviewed. Incidental attention was given to the needs and position of the Valley's principal crops, increasing pumping lifts and corresponding depletion of the underground storage, snow storage, stream flow, and the anticipated



consequences of continual depletion of the under-ground supply unless relieved naturally or otherwise.

An investigation of "Water-application Efficiencies in Irrigation and Their Relation to Irrigation Methods" was initiated in Utah in cooperation with Utah Agricultural Experiment Station, Dr. O. W. Israelsen being assigned to this study. During May Dr. Israelsen's time was devoted to obtaining necessary records, maps, etc., to form a basis for irrigation-method and crop surveys of all lands which obtain irrigation water from Utah Lake and Jordan River.

L. T. Jessup spent the month at Bonners Ferry, Idaho, in preparation for the season's work on the Kootenai project. A large number of soil samples were taken and soil moisture determinations made. Seven evapo-transpiration tanks 22 inches in diameter were installed. Planting was done at the experiment station, and wet-area maps were prepared.

The sand and silt removal laboratory constructed under the direction of R. L. Parshall near El Centro in Imperial Valley, Calif., was completed and three 6-inch uniform-diameter vortex tubes were installed, these being set at angles of 60, 45, and 30 degrees to the axis of the flume. Preliminary tests indicated a relatively low efficiency as compared with similar tubes investigated at the Bellvue laboratory last summer where a coarse sand medium was used in the experiments. One of the chief reasons for this lower efficiency was the fact that at the higher velocities the water over the tubes is more or less agitated and thus keeps a portion of the fine sand in suspension. Further tests of the vortex tube type of trap were planned, also tests of the grating type. Carl Rohwer spent several days at the laboratory early in the month.

In connection with the "Pumping for Irrigation" project Carl Rohwer visited the San Carlos project at Coolidge, Arizona., where 50 new deep irrigation wells are being put down to supplement the supply of gravity water. These wells are from 200 to 300 feet deep and, according to the project engineer, it is expected that they will average 1,800 gallons per minute. The pumps for the wells will be operated by electric motors with power from the Salt River valley, which will be supplied at a low rate per kilowatt hour. The total lift for the pumps will vary between 60 and 80 feet, which high lift makes it necessary to raise crops producing a large return.

J. C. Marr was appointed by Governor Ross of Idaho to serve on a committee of five to determine drought conditions in that State. As a result of the report submitted by this committee, the Federal Government allotted \$250,000 for relief work. Mr. Marr visited most of the drought stricken areas and organized county committees for handling reports on conditions and applications for relief. In most of the communities a very definite idea is had as to what may be done to relieve the situation and it appeared that it would be possible to meet the requirements in order to procure Federal aid.

Secretary Wallace and Mr. Appleby, assistant to the Secretary, visited several of the field stations of the Division of Irrigation while on a tour through the Western States for the purpose of investigating the drought situation. W. W. McLaughlin accompanied Mr. Wallace during a considerable part of the trip, and reported that the Secretary was intensely interested in the various phases of the work of the Division.



O. K. Hedden returned to the Toledo office June 11 from Moscow, Idaho where he has been constructing and testing a burner for use in the control of pea weevil. Data are not yet available to show the effectiveness of the burning operation, but the mechanical performance of the burner was very satisfactory. The burner was of the generating type, using Diesel fuel oil, and mounted flexibly to the front of a Caterpillar tractor so that the outfit could be handled over the rough field conditions in the Palouse section.

Draft tests of the disk jointers developed at Toledo indicate that plows equipped with the disk jointers operate with approximately 15 percent less draft than the same plows in the same conditions equipped with the standard colters and jointers.

Field day exercises were held at the Virginia Truck Experiment Station, Onley, Virginia, on June 19. G. A. Cumings attended. He also recently inspected fertilizer placement experiments in the Southeastern States, being carried on with cotton and tobacco.

A. L. Sharp and W. R. Humphries completed the planting of beans and cabbage near Geneva, New York, in connection with the fertilizer placement project. Similar experiments on beans and potatoes have been completed in Michigan by W. H. Redit and C. W. Brockseker.

According to D. A. Isler a portable machine shop unit has been obtained for use in connection with the development of dusting machines, stalk shavers, and other machinery for use in the control of pink bollworm.

After attending the A.S.A.E. meeting at Detroit, E. M. Dieffenbach conferred with State and Federal officials in Ohio and Indiana on spraying and dusting machinery for pest control.

The Zanesville erosion experiment station was visited by Messrs. Ashby, Marsden, Staebner, and Edgar and the illumination and household equipment displays of the General Electric Company at Cleveland were visited by Messrs. Ashby, Kable, Marsden and Edgar, enroute to and from the A.S.A.E. meeting at Detroit.